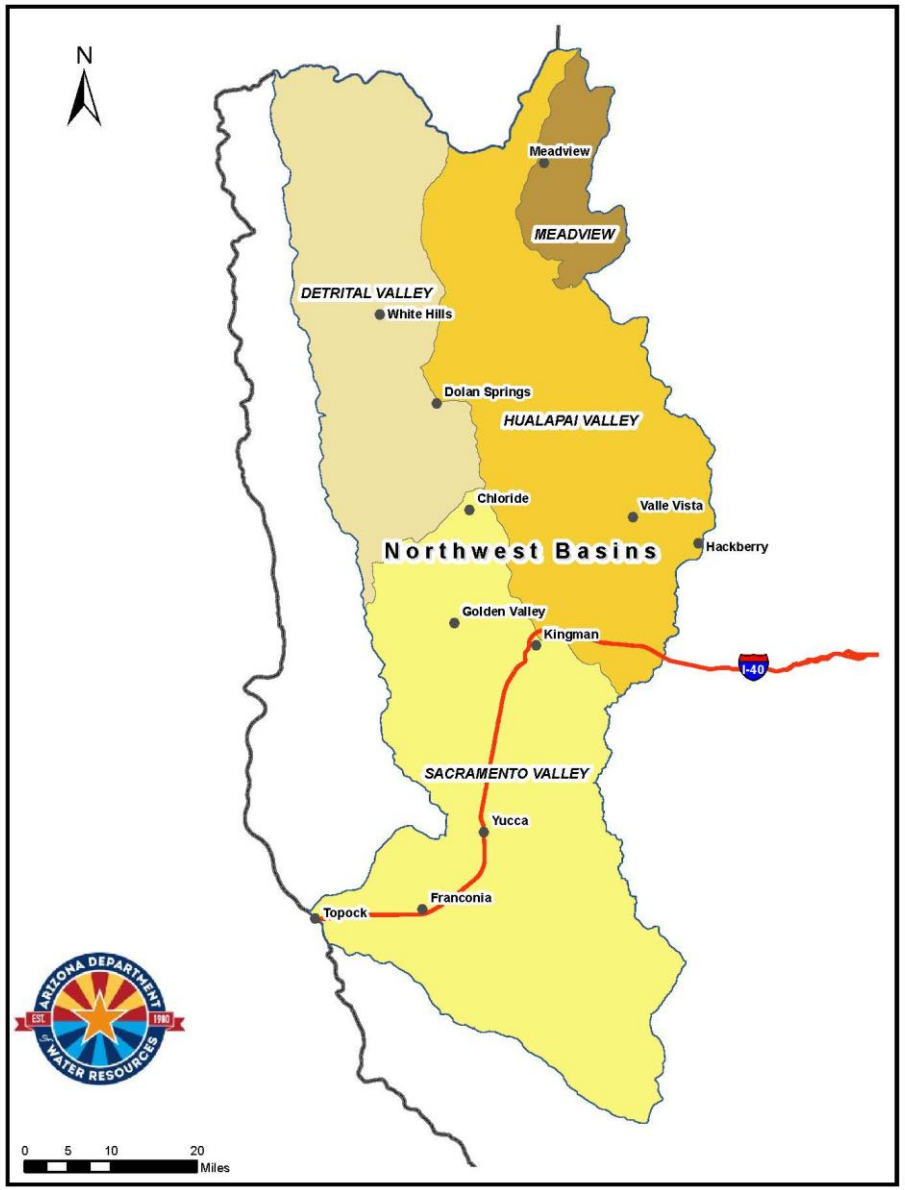
Northwest Basins Planning Area Water Demand Update

Northwest Basins Planning Area
Stakeholders Meeting
May 18, 2017

John Riggins Water Resource Specialist
Arizona Department of Water Resources

PROTECTING
ARIZONA'S WATER SUPPLIES
for ITS NEXT CENTURY



Northwest Basins Planning Area
Groundwater Basins

City/Town
Interstate
Groundwater Basin
DETRITAL VALLEY
HUALAPAI VALLEY
MEADVIEW
SACRAMENTO VALLEY
Northwest Basins Planning Area
State Border

Northwest Basins Planning Area
Groundwater Basins:

- Detrital Basin
- Hualapai Basin
- Meadview Basin
- Sacramento Basin

Updated Data: Municipal Demand

Updated Municipal Demands (acre-feet)

	2010	2016	2035	2060
Arizona Water Initiative Planning Area Updated Projection	**10,895**	**11,189**	**14,030**	**18,850**
***Strategic Vision Northwest Basins* Municipal Projections**	12,782	n/a	22,638	28,260

All data in acre-feet (AF)/year
*Using CWS Data, holding 2014 GPCD constant throughout projection period

Northwest Basins Estimated Industrial Demand

Updated Industrial Northwest Basins Planning Area	2016 Updated Estimate
Mining	57
Rock Production	3,050.6
Power Production	1,964.35
Dairies/Feedlots	2.5
*Turf	1,239.58
Other:	
*Airpark	91.1
Proving Grounds	103
*Truck Stops	55.7
Manufacturing	88.2
*State Prison	181
Total	6,833.35 acre-feet

All data in acre-feet/year.

*Data updated since February 28, 2017 meeting

Agricultural Water Demand Data Sources

* U.S. Geological Survey (USGS) – 2016 field verification of groundwater basins per ADWR request
* Conducted by U.S. Geological Survey Arizona Water Science Center
* Hualapai & Sacramento Field Visit August 2016 USGS
* Basins are monitored by USGS via Satellite
* Next Field Verifications for Planning Area: 2017
* ***Please note that these water demands are estimated water uses based of scientific formula and not reported values. The 2016 water demands in the following presentation are still considered provisional and subject to change after further review***

Cropped area along Long Mountain Hualapai Basin

2016 is provisional estimated water withdrawal data

U.S. Geological Survey Data Collection

- **The USGS collects and estimates annual water withdrawals for ADWR for groundwater basins outside of Active Management Areas**
  - Areas where reporting is not required
- **Before 1991, the USGS used power use data to estimate irrigation groundwater withdrawals for these areas.**
- **After 1991, the USGS established a method to calculate groundwater withdrawals for irrigation using these variables:**
  - Crop type
  - Irrigation-requirement rates for a specific crop
  - Irrigation type

Cleared area in the Sacramento Basin

Source: U.S. Geologic Survey, Water Use Program Overview Presentation; February 2, 2017

Irrigation System Efficiencies

Surface Flood Unlined <50-60 Percent

Surface Flood Poorly Lined 55-65 Percent

Surface Flood Lined 60-75 Percent

Center Pivot 75-85 Percent

Sprinkler 75-85 Percent

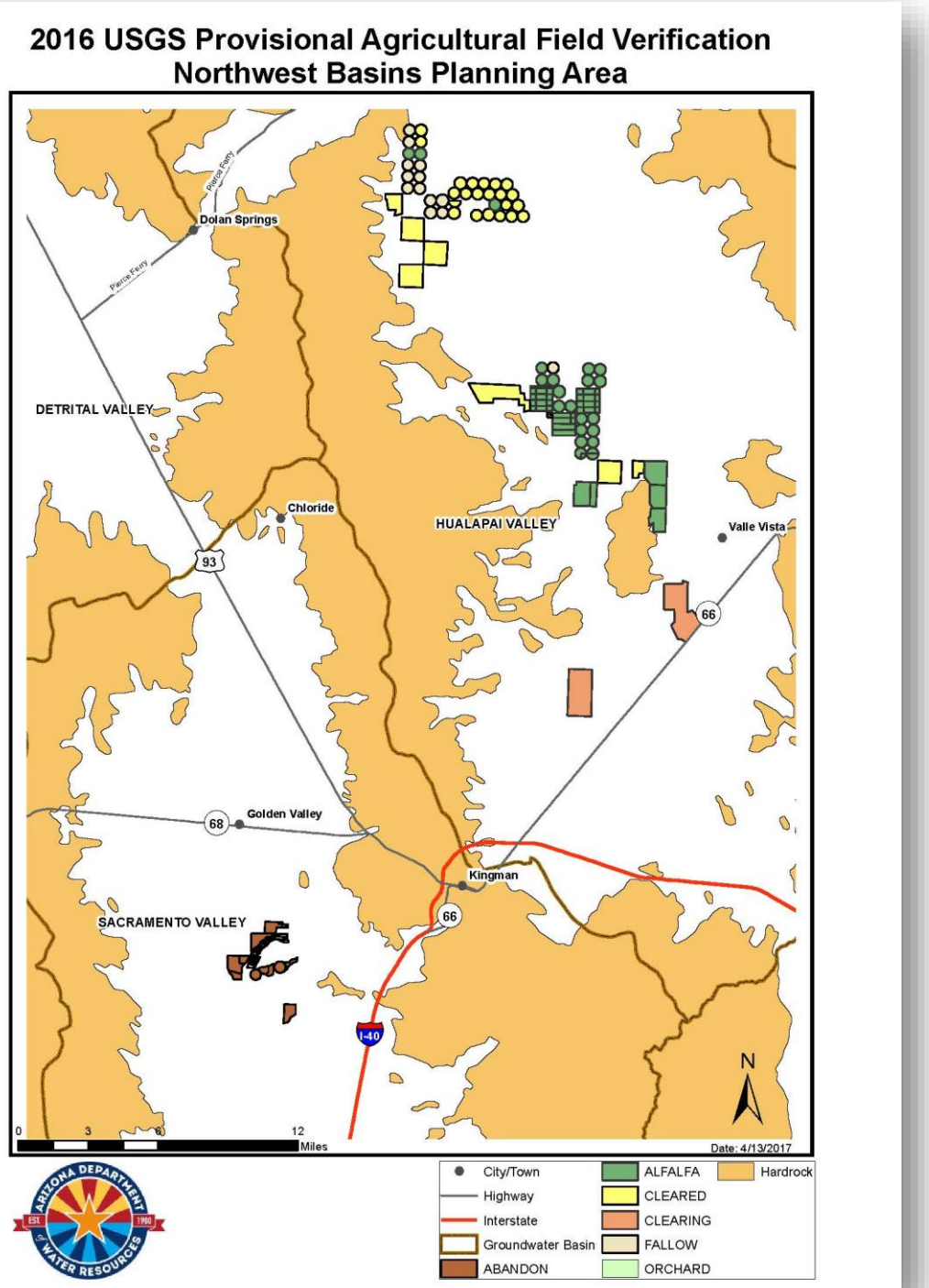
Micro Irrigation 80-90 Percent

Source: U.S. Geologic Survey, Water Use Program Overview Presentation; February 2, 2017

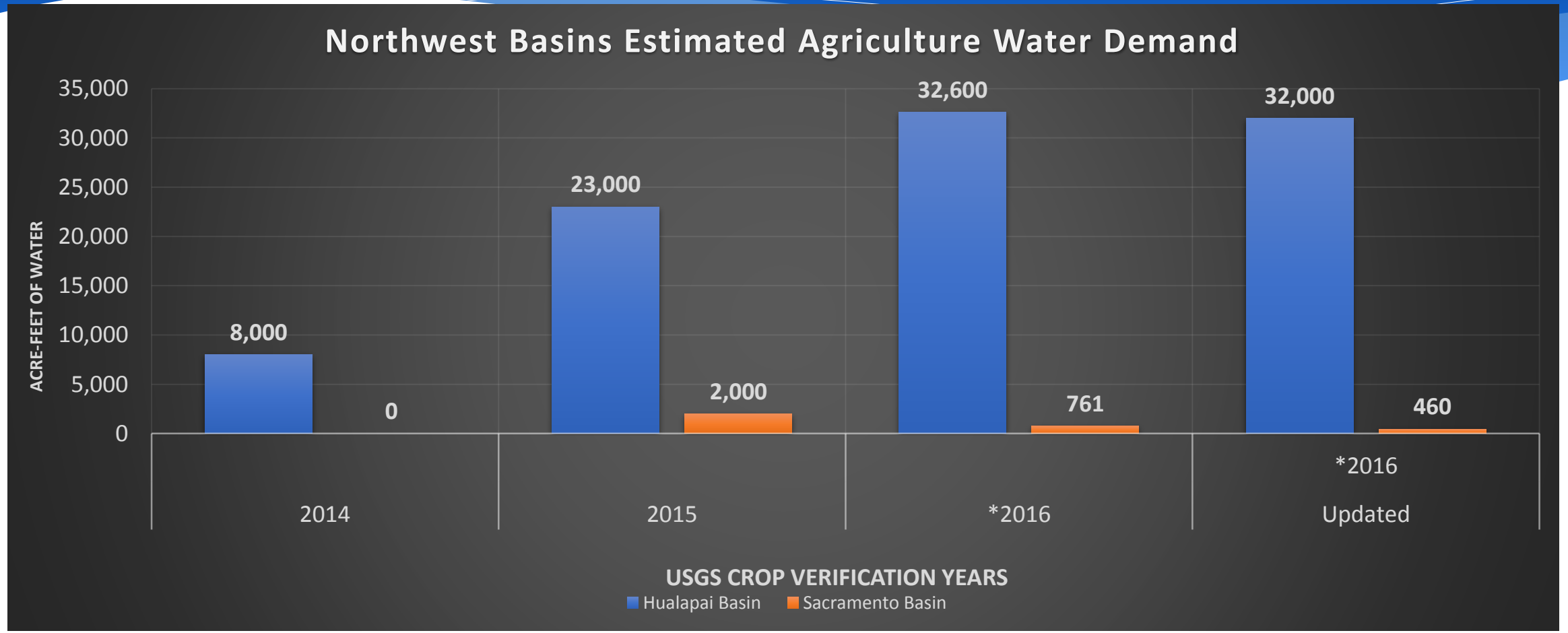
Previous Planning Area Estimated Agricultural Water Demand

Basin	2014	2015	Initial Provisional Estimates 2016	Updated *2016
Hualapai Basin	8,000	23,000	32,600	**32,000**
Sacramento Basin	<300	2,000	761	**460**
TOTAL	>8,000	25,000	33,361	**32,460**

Source: U.S. Geologic Survey
2016 Estimated Water Withdrawal Data is considered provisional
All water demand values in acre-feet



Previous Planning Area Estimated Agricultural Water Demand



Source: U.S. Geologic Survey
*2016 Estimated Water Withdrawal Data is considered provisional
All water demand values in acre-feet

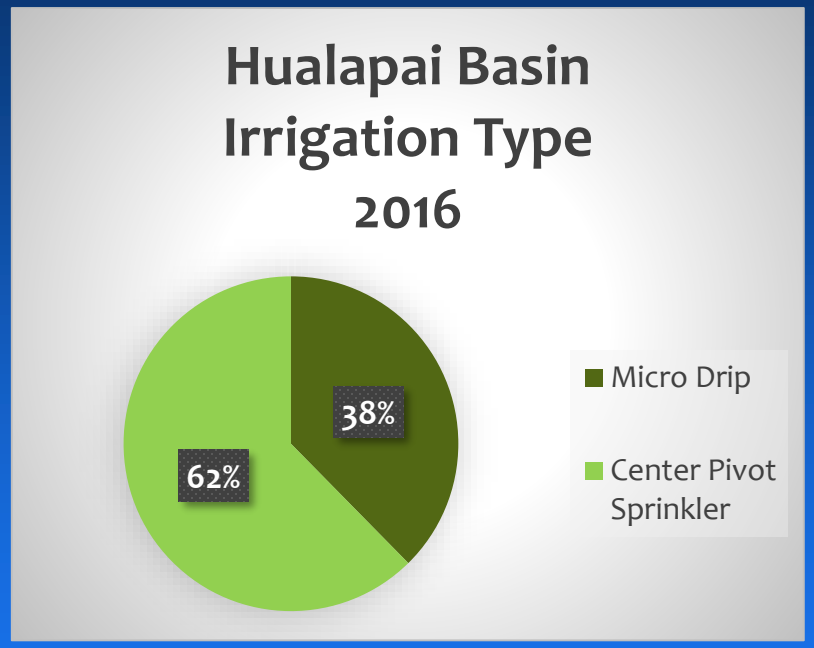
Hualapai Basin

Farming in Red Lake Area

Hualapai Basin

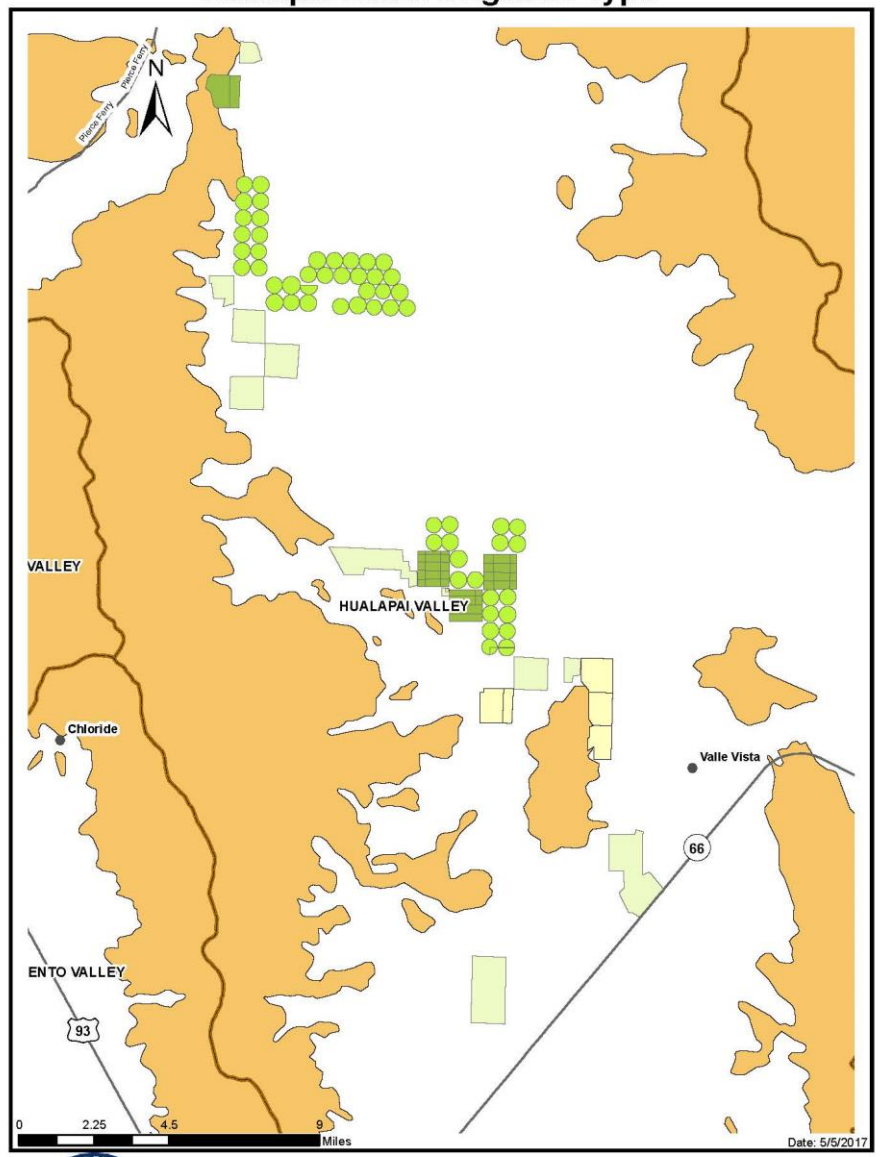
Farming in the Long Mountain Area

Hualapai Basin Updated Provisional Agricultural Water Use

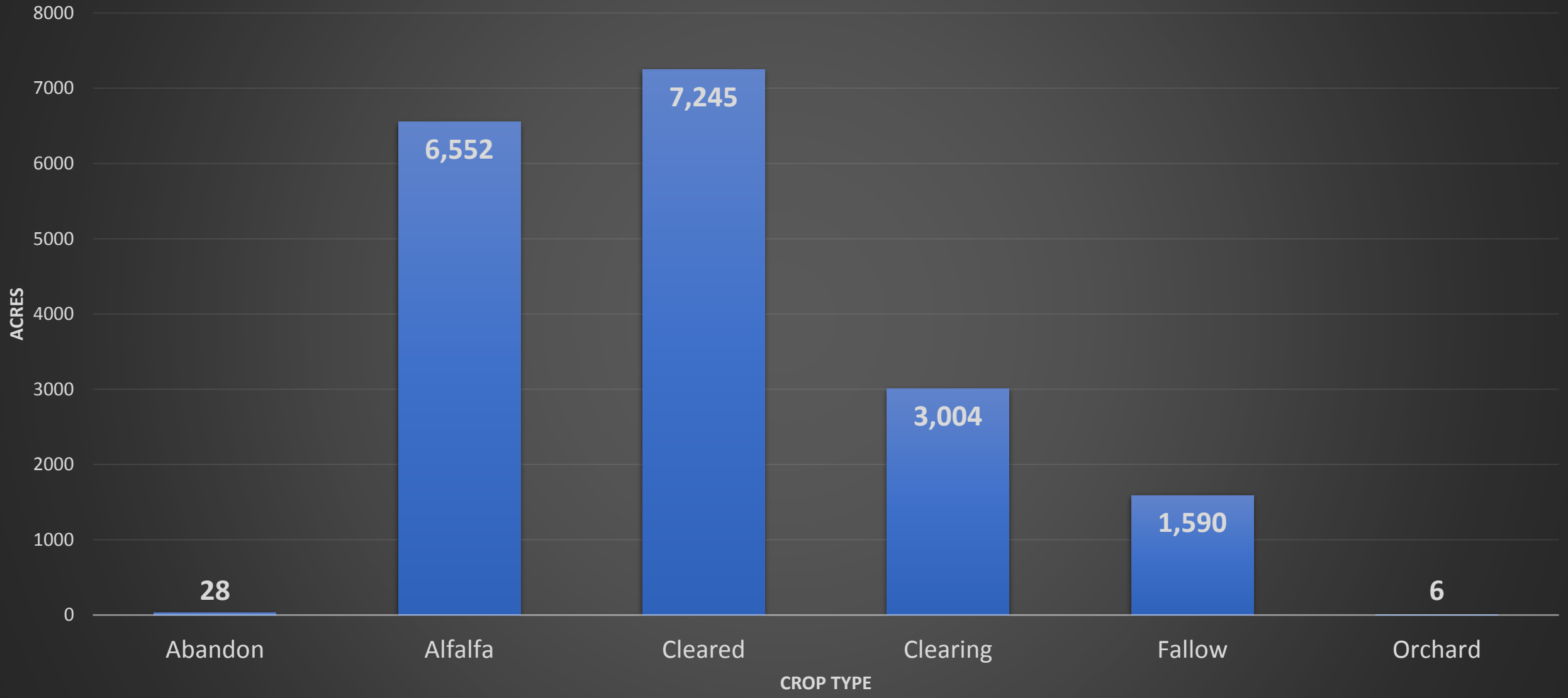


Irrigation Type	Efficiency Range	Est. Basin Efficiency
Center Pivot Sprinkler	75-85%	**80%**
Micro Drip	80-90%	**90%**

Source: U.S. Geologic Survey
*2016 Estimated Water Withdrawal Data is considered provisional
All water demand values in acre-feet



Hualapai Basin Crop Acres (Summer 2016)



Source: U.S. Geologic Survey
*2016 Estimated Water Withdrawal Data is considered provisional
All water demand values in acre-feet

2016 Hualapai Groundwater Basin Analysis of Crop acreage distribution by season

Crop Type	Fall Acres	Summer Acres	Spring Acres	Winter Acres
Abandon	0	28	0	0
Alfalfa	0	6,552	1,695	1,325
Cleared	0	7,245	0	0
Clearing	0	3,004	0	0
Fallow	1,695	1,590	0	370
Orchard	180	6	0	0
Total	**1,875**	**18,425**	**1,695**	**1,695**

Source: U.S. Geologic Survey
*2016 Estimated Water Withdrawal Data is considered provisional
All water demand values in acre-feet

Sacramento Basin

Farming in Golden Valley Area
Sacramento Valley Groundwater Basin

Sacramento Basin

(Looking South from Highway 223)

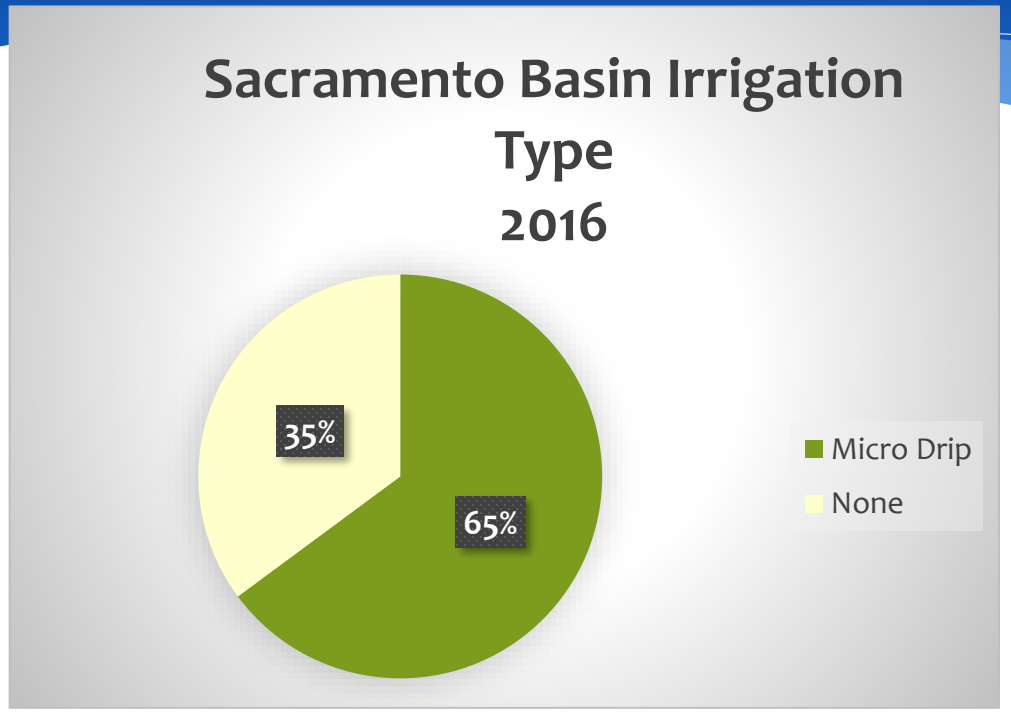
Sacramento Basin

(Looking Southwest from Highway 223)

Sacramento Basin

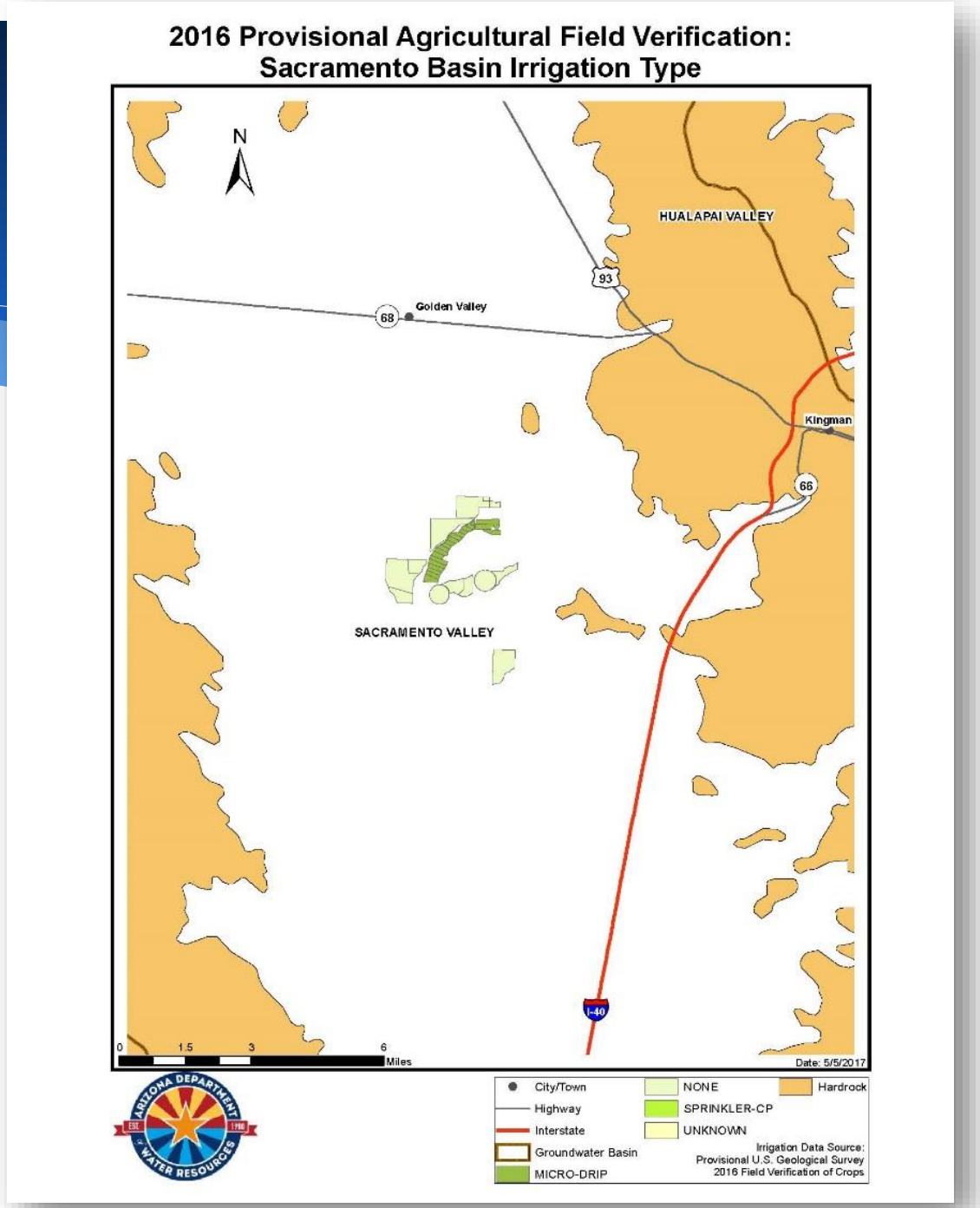
(Looking North from Highway 223)

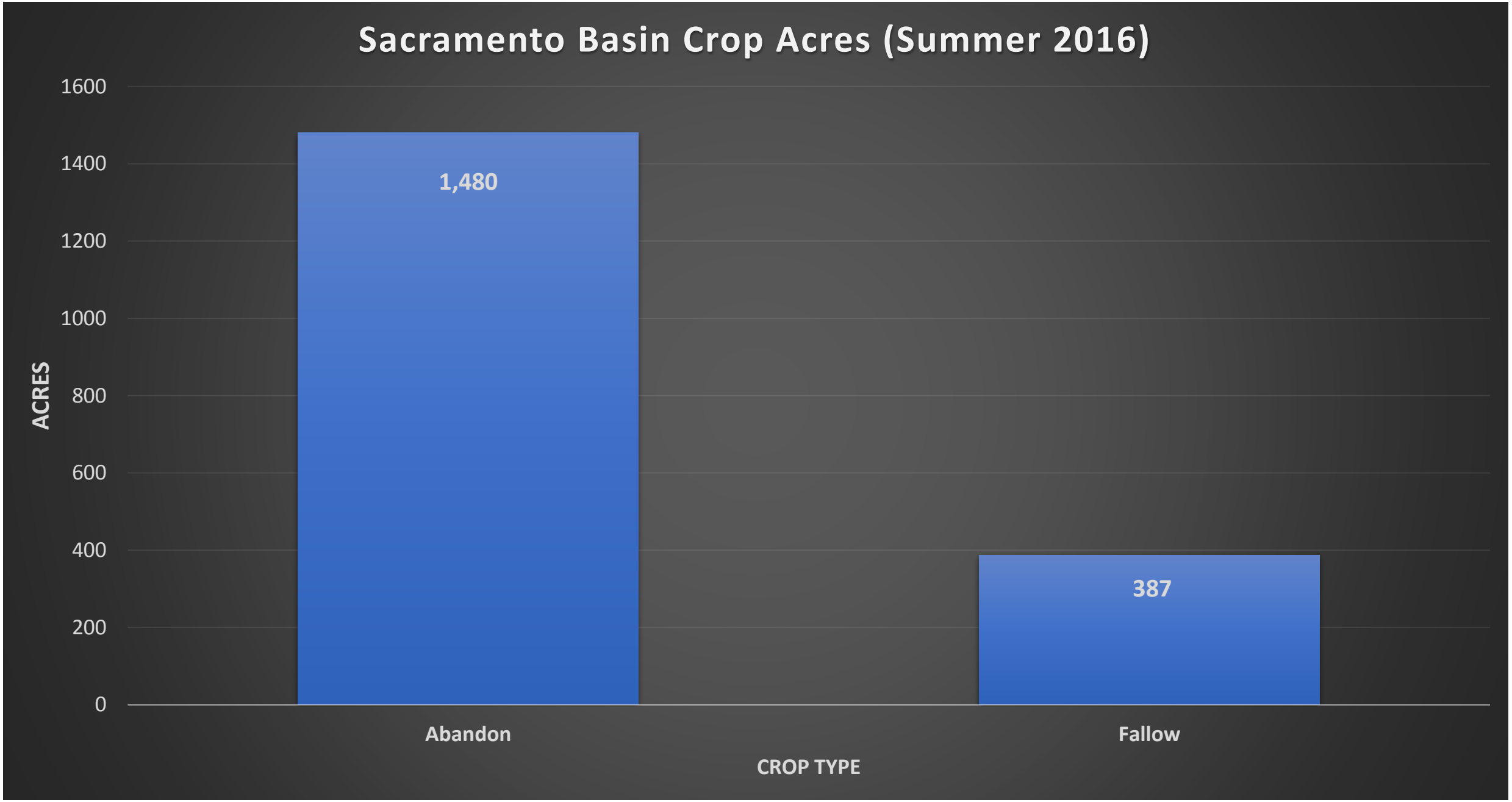
Sacramento Basin Updated Provisional Agricultural Water Use



Irrigation Type	Efficiency Range	Est. Basin Efficiency
Micro Drip	80-90%	90%

Source: U.S. Geologic Survey
*2016 Estimated Water Withdrawal Data is considered provisional
All water demand values in acre-feet





Source: U.S. Geologic Survey
*2016 Estimated Water Withdrawal Data is considered provisional
All water demand values in acre-feet

2016 Sacramento Groundwater Basin Analysis of Crop acreage distribution by season

Crop Type	Fall Acres	Summer Acres	Spring Acres	Winter Acres
Abandon	0	1,480	0	0
Alfalfa	0	0	387	387
Cleared	0	0	0	0
Clearing	0	0	0	0
Fallow	387	387	0	0
Orchard	0	0	0	0
Total	**387**	**1,867**	**387**	**387**

Source: U.S. Geologic Survey
*2016 Estimated Water Withdrawal Data is considered provisional
All water demand values in acre-feet

Northwest Basins Planning Area Updated Estimated Water Demands with Comparative Past Data

Provisional Northwest Basins Planning Area Estimated Water Demand Update		
Water Use Sector	**Year**	**Estimated Water Demand (acre-feet)**
Municipal Water Demand	2016	11,189
Industrial Water Demand	2016	6,833
*Agricultural Water Demand	2016	32,460
Updated 5-16-2017		**50,482**

**Agricultural Water Demand Provisional 2016 USGS Estimated Data*

All 2016 Northwest Basins Planning Area water demand estimates are provisional and subject to change

All Water demands are in acre-feet

Strategic Vision Northwest Basins Water Demands		
Water Use Sector	**Year**	**Estimated Water Demand (acre-feet)**
Municipal Water Demand	2010	12,782
Industrial Water Demand	2010	1,475
Agricultural Water Demand	2010	0
		14,257

All Water demands are in acre-feet

Source: A Strategic Vision for Water Supply Sustainability January 2014, ADWR. Table P.A. 15-1 Projected Demands-Northwest Basins Planning Area. Page P.A. 15-4


Questions?